

ONTARIO WATER RESOURCES COMMISSION

Village of Streetsville, Ontario.
Sewage treatment plant.

April 1959

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VILLAGE OF STREETSVILLE, ONTARIO

SEWAGE TREATMENT PLANT

ONTARIO WATER RESOURCES COMMISSION

APRIL, 1959

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ONTARIO

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SECTION "A"
DESCRIPTION OF THE PLANT AND LOCAL CONDITIONS

1. General

The present sewage treatment plant is of the complete treatment activated sludge type and includes influent works, primary clarifier, aeration tanks, secondary clarifier, chlorine contact chamber, digester, sludge drying beds, and auxiliary works.

Construction of the new plant commenced November, 1957, and was first in service on Tuesday, October 28, 1958.

The plant has a design capacity of 800,000 Imperial Gallons per day and will serve a population of approximately 8,000 people. The population of the Village of Streetsville, Ontario, in October, 1958 was approximately 4,500 people.

The following description of the plant follows the flow pattern of the sewage as it passes through the plant.

2. Sewers and Sewage

The sewage is collected by a system of separate sanitary sewers including four pumphouses and enters the sewage treatment plant by gravity through two 12" and one 8" diameter cast iron inverted syphons.

The three inverted syphons discharge to a common manhole at the north side of the plant site which is connected to the influent works by a 14" diameter cast iron pipe.

3. Influent Works

At the influent works, a gate arrangement is provided to allow sewage to by-pass the new plant. Sewage may pass from the first

chamber of the influent works, through a 14" cast iron pipe to the old settling tanks, then to the chlorine contact chamber and the outfall sewer. This sewer discharges to the Credit River. By a second by-pass (12" diameter cast iron), the flow of sewage can be diverted to by-pass the influent works but will permit flow through the balance of the plant. An adjustable weir is provided in the influent works to allow storm flows in excess of the hydraulic capacity of the new plant to pass through the old settling tank, thus providing some degree of treatment for such flows.

Normally, however, the sewage passes through one of two manually cleaned bar screens, where twigs and rags are removed, then through one of the two manually cleaned grit chamber channels. Both of these channels terminate with a proportional weir which maintains a constant velocity through the grit chambers of one foot per second. These chambers have been designed to operate one at a time so that the other can be cleaned in readiness for operation.

From the grit chamber channels the sewage passes through a Parshall Flume, whereby transmitting the pressure from a point upstream from a precision built stainless steel throat, the quantity of sewage entering the plant is measured. The flows are indicated and recorded on a weekly graph by an instrument in the plant building.

From the flume, the sewage enters the last chamber of the influent works, into which the 6" supernatant line from the digester discharges. The combined raw sewage and supernatant flows then pass through a 12" diameter cast iron pipe to the influent well of the primary clarifier. This 12" C.I. feed line is valved, so that the sewage can either pass to the primary clarifier, or by-pass the clarifier to go direct to the aeration tanks or by-pass the plant completely and flow to the chlorination chamber.

4. Primary Clarifier

The 12" C.I. feeder line discharges into the well at the centre of the primary clarifier, 2'-3" below the liquid level. Clarified sewage flows to the effluent launders thus to the aeration tanks.

Dorr-Oliver-Long Limited mechanical equipment scrapes settled sludge to the centre of the clarifier by means of continually moving squeegees on the bottom, which travel over the complete area of the bottom of the tank.

The raw sludge is withdrawn from the centre of the sloped bottom of the tank, through a 6" C.I. pipe, by a Balto LH Simplex Carter sludge pump, located in the basement of the Plant Building. The bottom of the scum well is connected to the suction line of the same pump. The pump is rated at 75 U.S. gallons per minute at 50 foot discharge head. The usual discharge is to the digester, however, this pump has the valved

suction connected to four locations.

- (1) Primary Tank bottom
- (2) Scum well
- (3) Old (1947) Settling Tank, and
- (4) Digester bottom.

The valved discharge is connected to the following:

- (1) The suction side of the pump (by-pass)
- (2) The digester
- (3) Sludge beds
- (4) Primary clarifier inlet.

The scum well is filled by a scum skimmer arrangement, which is driven by the primary clarifier mixing mechanism.

The effluent from the primary tank passes over the primary tank weirs into collecting launders, where it flows to the aeration tanks. By a piping and valve arrangement, this effluent can be diverted into either or both of the aeration tanks, or to a by-pass line thus to the outfall sewer.

5. Aeration Tanks

(i) Tanks

The two parallel aeration tanks are each 104' long x 17' wide, and have a common wall which carries the aeration piping. The depth of liquid in the tanks is 12'-0" with an average detention time of 7.6 hours.

(ii) Diffusers

In each aeration tank there are 24 separately valved banks, of General Filtration and Engineering's Flo Rite Air Diffuser Assemblies (total of 96 Diffuser Assemblies).

(iii) Blowers

There are two Rotary Positive Blowers each with a capacity of 760 c.f.m. at 7.0 p.s.i.g. when operating at approximately 1800 r.p.m. and requiring 30.0 h.p. An air intake is provided on the south side of the building and an inlet silencer in the building basement.

The system is designed for single blower operation. The second blower is a standby unit and the two normally should not be operated together.

6. Secondary Clarifier

The effluent from the aeration tanks flows to the inlet well of the secondary clarifier. The activated sludge is then settled

by gravity. The clear effluent passes over the V-notched weirs at the periphery of the tank and is collected in the outside launders. From the launders, it travels through 12" and 14" Cast iron pipes to the chlorine contact chamber.

The secondary clarifier is equipped with a sludge scraper mechanism similar to the primary clarifier but without the scum removal mechanism.

7. Chlorine Contact Chamber

The effluent of the secondary clarifier enters the 10'-0" x 20'-0" chlorine contact chamber adjacent to the River. A chlorine diffuser located at the inlet distributes the chlorine solution across the entrance of the tank. In order to mix the chlorine solution thoroughly, there is a series of three baffles in the tank. The effluent passes under the first, over the second and under the third baffle. The detention time of this tank is 20 minutes at rated capacity.

8. Outfall Sewer

The effluent from the chlorination contact chamber flows to the open sand filter or to the 14" cast iron outfall sewer to the Credit River.

9. Effluent Filter Bed

A limited amount of the effluent from the activated sludge plant can be discharged through to the 100 ft. square open sand filter during the summer months.

The effluent from the filter bed discharges to the Credit River, by an 8" concrete outfall sewer which was installed in 1947.

10. Sludge Return Pumps

The secondary sludge is withdrawn from the bottom of the secondary clarifier by 280 Imperial g.p.m. Smart Turner sludge return pumps, located at the north-east corner of the pumphouse basement. These centrifugal pumps are equipped with U.S. Varidrive electric motors permitting manual adjustment of the speed. The pumps are designed for single operation and have a maximum rated capacity of 50% of the design capacity of the plant.

The above sludge return pumps discharge to the sludge division box. By adjusting the sludge division box weir, the portion of sludge wasted to the primary clarifier can be varied.

11. Digester

(a) Tank

The sludge from the primary clarifier, consisting of primary

sludge and waste activated sludge, is taken to a closed concrete tank where anaerobic bacteriological action takes place within the sludge to break it down into more stable compounds. This concrete digestion tank is 45 feet in diameter and has a side liquor depth of 26' - 7½". The capacity of the tank is approximately 227,000 gallons.

If the digester is operating properly, the sludge will be completely digested yielding gasses (collected from the dome), liquids (returned to sewage plants via supernatant line to the influent works), and digested sludge which is discharged to the sludge drying beds.

In order that the rate of digestion is carried on at an accelerated rate the temperature of the sludge within the digestion tank should be maintained at 85 to 90 degrees F. How this sludge temperature is achieved is given under paragraph (d) Recirculation Heating below.

(b) Feed

The digester tank is filled through a 6" cast iron feed line by the primary sludge pump. The sludge consists of raw sludge and scum from the primary tanks, and that portion of returned sludge which has been wasted to the primary tanks. It is extremely important that the primary tank be pumped clean of sludge, at each time of pumping. The recommended procedure is to pump the sludge at least twice a day or more frequently if necessary. This practice retards the primary tanks from becoming septic.

(c) Supernatant

As the sludge is pumped into the digester, the supernatant liquid overflows by gravity to the influent works. Overflow rings are provided at the digester to vary the gas pressure in the digester by changing the liquid level. The rings permit the overflow height adjustment to be made in increments of 1".

(d) Recirculation Heating

The sludge is recirculated automatically through the (350,000 BTU/hr) heat exchanger in the Walker Process Scotch Marine Boiler (500,000 BTU/hr), to maintain the temperature inside the digester between 85°F and 90°F. Recirculation is done through two 3" C.I. insulated lines by a Weinman-Canada Type 3 U H B centrifugal horizontal pump, capable of circulating 100 Imperial gallons per minute at a head of 35 feet.

(e) Mixers

The digester is equipped with one Walker Process draft tube mixer which permits the effective mixing of raw sludge with digested sludge for seeding; increases the rate of digestion; accelerates the release of the generated gas; promotes a more

rapid and uniform heat exchange; and helps to retard the formation of scum, which can be an undesirable condition inside the digester.

The mixer is equipped with a 24" diameter propeller at the top of a draft tube, which is driven by a 10 h.p. motor, giving a capacity of 10,000 g.p.m. at 294 r.p.m.

(f) Digested Sludge Removal

The digested sludge is withdrawn from the centre of the bottom cone through a 6" C.I. sludge suction line, which is connected to the 75 U.S. g.p.m. primary sludge pump located in the pumping station. This sludge may be directed to either the sludge drying beds, or may be recirculated to the digester.

(g) Gases

The gases generated in the digester may be taken off at the dome apex through a 4" Cast iron pipe line to the pumping station. At present the 4" cast iron gas feed line pipe has been capped at the dome of the digester, since the anticipated amount of gas produced will not be sufficient to maintain a continuous flame in the boiler.

12. Sludge Drying Beds

Sludge from the digester is dried on the two open 50 ft. x 100 ft. sludge drying beds (total area 10,000 feet).

13. Boiler Room

The Boiler Room is located in the basement of the plant building. In this room is located the combination type digester gas and natural gas fired boiler manufactured by Walker Process Industries which is used for heating both the buildings and the digester sludge. As previously described, the boiler is equipped with a heat exchanger through which is pumped the sludge from the digester by the electrically driven centrifugal pump located beside the boiler. In the boiler room are mounted the indicating devices for the gas pressures in the digester, line and waste gas burner, along with the temperature indicators for the digester, and the various parts of the boiler system.

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SECTION "B" - EQUIPMENT NAME PLATE DATA

This data, has been arranged, according to the flow pattern of the plant, with all of the data for each piece or group of equipment together.

1. Clarifiers

(a) Supplier & Manufacturer:

Dorr-Oliver-Long Limited,
Toronto Office: 1819 Yonge St.,
Toronto 7, Ont.
Telephone: HU. 5-0714.

Main Plant: 174 West Street,
Orillia, Ontario.
Telephone: Tor. EM. 3-8781.

(b) Name Plate Data:

(i) Primary Clarifier Mechanism

Serial No. D.O.L. 563-1

Falk Motoreducer

Model 12-3 E F 4 - 04B17
No. 5811 02333 Date 2/58
RPM 25 Ratio 71.66
A G M A Rating _____ Class 2

Motor: English Electric Co. Canada Ltd.,
St. Catharines, Canada.

Type VCE Frame 182D
Code 788-359E Serial No. 269 954
60 cycle 1.49 amps. 550 V. 3 phase
1.0 H.P. 1750 RPM 55° C. Continuous Duty

(ii) Secondary Clarifier Mechanism

Serial No. D.O.L. 563-2

Falk Motoreducer

Model 12-3 EF 4-04B17
No. 5811 0233 Date 2/58

Con. Falk Motoreducer

RPM 25 Ratio 71.66

A G M A Rating _____ Class 2

Motor: English Electric Co. Canada Ltd.,
St. Catharines, Canada.

Type VCE Frame 182D

Code 788-359E Serial No. 269 953

60 Cycle 1.49 amps. 550

1.0 H.P. 1750 RPM 55°C Continuous Duty

(c) Manufacturers' Publications:

Bulletin No. 700 - Operating Instructions for the Dorr
Clarifier - All Types

" 1-DH-2 - Operating Instructions for Centre
Mechanism Type "A"

" 1-OA-02 - Operating Instructions for Dorr Overload
Alarm, Enclosed Type

Dwg. No. QP-210 - The Dorrco Squarex Clarifier - List of
Parts

" " QP-155-1- Skimmer List of Parts

" " QP-77-3 - Drive Head - List of Parts

" " QP-83-3 - Overload Alarm - List of Parts

Bulletin No. 3800- Instructions for Installation and Main-
tenance Falk Motoreducers (The Falk
Corporation)

Dwg. No. 3520.00 - Falk Motoreducers - Concentric Shaft
Type - Dimension Dwg.

" " 3830 - Falk Motoreducers - Replacement of
Bevel Gears "Service Manual"

Publication 1409 - Instructions for Installation, Operation
and Maintenance Polyphase Induction
Motors (English Electric Co. of Canada Ltd.)

Dwg. No. 126-653 - English Electric Co. of Canada Ltd. -
Dimensions of Totally Enclosed Squirrel
Cage Induction Motors Type "VCE CEMA -
"D" Flange Mounted

Chart #552 - Lubrication Chart - Dorrco Equipment

Instructions #306-1 Erection Instructions - The Dorrco
Squarex Clarifier

Dwg. No. M/P 35159 The Dorrco Squarex Clarifier 35'0" Sq.
Concrete and General Drawing (with Skimmer)

Dwg. No. 24299/2	- The Dorrco Squarex Clarifier 35'0" Sq. Weir & Scum Baffle Erection Drawing
" " M/P 29425	- The Dorr Squarex Clarifier 35'0" Sq. Skimmer Erection Diagram
" " M/P 31860/2	- The Dorr Clarifier 35'0" Sq. Handrail Assembly
" " M/P 35173	- The Dorrco Squarex Clarifier 40'0" Sq. Concrete & General Drawings (without skimmer)
" " M/P 31860/2	- The Dorr Clarifier 40'0" dia. Handrail Assembly
" " M/P 35721	- The Dorr Clarifier - 4 ft. Drive Head and Falk Reducer Drive Assembly
" " 36518	- The Dorr Clarifier - 4 ft. Drive Head Assembly
" " 16840/2	- The Dorrco Squarex Clarifier 30'0" to 40'0" Assembly of Corner Blade
" " 15924/4	- The Dorrco Squarex Clarifier 20'0" to 40'0" Erection Diagram for Guide Plates
" " 25629/2	- Overload Alarm, General Drawing

2. Windows

- (a) Supplier & Manufacturer: AlSCO Products of Canada Ltd.,
1557 Eglinton Avenue West, Toronto
Telephone: RU. 3-3383.
- (b) Manufacturers' Publications
Dwg. No. 1010 - Pumphouse Windows

3. Blowers & Appurtenances

- (a) Supplier: National Materials Handling Ltd.,
404 Old Weston Road, Toronto,
Telephone: RO. 2-8211.
- Manufacturer: Sutorbilt Corporation,
Los Angeles, California, U.S.A.
- (b) Name Plate Data:
- | | |
|---------------------|---|
| <u>Blower No. 1</u> | (north) Sutorbilt Corporation,
Los Angeles, Calif.
Series 400 size 10 x 11 Displacement 1.5
Serial No. 1069 Date _____ |
|---------------------|---|

Motor: Manufactured in England by Newman Industries Ltd. for Leland Electric Canada Ltd., Toronto, Guelph, Montreal.
LeLand - Newman Motor
Frame 326U/DD2 782 BB H.P. 30
RPM 1800 Cycles 60 Phase 3
Rating Cont. Code F Design B
Volts 550 Amps. 30.0 Service Factor 1.15
No. D 761104 Temp. Rise 40° C.

Blower No. 2 (south) Sutorbilt Corporation,
Los Angeles, Calif.
Series 400 Size 10 x 11 Displacement 1.5
Serial No. 1070 Date _____

Motor: Manufactured in England by Newman Industries Ltd. for Leland Electric Canada Ltd., Toronto, Guelph, Montreal.
Leland - Newman Motor
Frame 326U/DD2 782 BB H.P. 30
RPM 1800 Cycles 60 Phase 3
Rating Cont. Code F Design B
Volts 550 Amps. 30.0 Service Factor 1.15
No. D448201 Temp. Rise 40° C.

Air Intake Filter
Dollinger Corporation, Rochester, N.Y.,
Staynew Filter
Model D - 1100 B-8
Max. CFM 1100
Serial 24482
Replacement Cartridge Order Post No. 49-4

Air Flowmeter George Kent Limited, London & Luton,
made in England.
Serial No. STL 4000/1033

(c) Manufacturers' Publications:

Book D	General Design and Operating Instructions - Sutorbilt Rotary Positive Blowers
Dwg. No. 6962-49	Dimensional Drawing Sutorbilt Series 400 Blowers (Sutorbilt Corp.)
" " 6759-54	Cross Section for Series 400 Blowers (Sutorbilt Corp.)
" " 8233-49	10 x 11 Series 400 Blower, 30 HP Motor Fr. 32611 (Sutorbilt Corp.)
" " 9044-58	Pressure Relief Valve - 4" size (Sutorbilt Corp.)
" " 13337-S	Staynew Model G 15 Filter with 8" Outlet Flange (Dollinger Corp.)

Dwg. No. 4000-101-4 SOA 8 Air Intake Snubber

4. Diffusers and Air Piping

(a) Supplier: General Filtration and Engineering Limited,
1712 Avenue Road, Toronto, Ont.
Telephone: RU. 3-1816.

(b) Manufacturers' Publications:

Typed List - Parts List of Air Diffuser Piping
Dwg. No. TJ-1068-1 - Diffuser and Air Piping Arrangement

5. Motor Control Centre

(a) Supplier: Northern Electric Company Limited

Manufacturer: Canadian Cutler - Hammer Ltd.,
Toronto, Canada.

(b) Name Plate Data:

Motor Control: Canadian Cutler-Hammer Limited,
Motor Control
(Supplied by Northern Electric Company
Limited).
Bul. 9800 8 - 12063
Volts 550 Type C
Phase 3 Cycles 60
C.S.A. Approval No. 5826

Meter (Electrical)

Sangamo Company Limited, Leaside, Canada
Type 4L2 Demand Energy (Polyphase) Meter
Rated Amps. 5 Max. Amps. - Volts 115
Cycles 60 Phase 3 W-3 K.W. 1.5
KL/Disc 1/3 Test Period 32 mins.
Serial No. 3691447

(c) Manufacturers' Publications:

Typed Sheet - Canadian Cutler-Hammer's Revised Specifications
Dwg. No. SK82056-1B - Proposed M.C.C. Streetsville Sewage
(C.C.H. Ltd.)
Dwg. No. CH144672A - Wiring Diagrams

6. Sewage Flowmeter Recorder

(a) Supplier: Control & Metering Ltd.,
305 Kipling Avenue South,
Toronto 14, Ontario.
Telephone: CL. 9-8411.

Manufacturer:

George Kent (Canada) Ltd., Toronto, Ont.

(b) Name Plate Data:

George Kent (Canada) Ltd., Toronto, Ont.
G.S.A. approved
110 Volts 60 Cycles Rating 1.6 Watts
Type KF/CID Recorder
George Kent Ltd., Luton, England
No. KFM 802 - (molded in Back of Casing)
Kent Fuse Box 110V. 60 cycles
Cartridge S.W.G. T.C.

Weekly charts: Diag. No. D 9513
George Kent Limited, London &
Luton, England.

(c) Manufacturers' Publications:

Book of Instructions: George Kent (Canada) Ltd.

Dwg. No. WSF 163 - Arrangement of KP/CID Recorder Wall
Mounting

7. Chlorination Equipment

- (a) Supplier: Control & Metering Ltd.,
305 Kipling Ave., South,
Toronto 14, Ontario.
Telephone: CL. 9-8411.

Manufacturer:

Builders-Providence,
Division of B-I-F Industries, Inc.,
Providence 1, Rhode Island, U.S.A.

(b) Name Plate Data:

(i) Chlorination Machine

Builders Chlorinizer
B-I-F Industries of Canada Limited,
Toronto, Ontario, Canada
Serial No. C-141

Arrangement of Distribution Panel:
Separate discharge lines to:

- (1) Chlorine contact chamber.
- (2) Sludge drying bed effluent chlorination chamber.
- (3) Head of influent works.
- (4) Influent well of primary clarifier.

(ii) Scale

Fairbanks-Morse
Code 1124 Capacity 1000 lbs.
Serial No. E14018

(iii) Fan

Alpha Mfg. Co., Winnipeg, Canada
Model No. DC 10
Style CAB
Serial No. C4274-1

Motor - Robbins & Myers, Brantford
1/30 H.P. 110 Volts FP SA 42
60 Cycle 1.4 Amps. 1050 RPM
Continuous Rating Single Phase Type
Serial No. AH 21648

(c) Manufacturers' Publications:

BIF File No. 840.44 Instructions, Installing and
Ref. No. 840-N11 Operating Model EVS Chlorinizer
Pages 1 - 24

BIF File No. 840.20A Builders Chlorinizer Model EVS
Sup. Bulletin 840-L23D Volumetric Chlorine Gas Feeder
(Pages 1 - 4)

Dwg. No. B-123193 Typical Installation Chlorinizer
Ref. No. 840-L31 Model EVS-M
BIF File No. 840.25 EVS-M

Bif File 840.42 Chlorinizer dimension Model EVS
Ref. No. 840-L24A

Dwg. No. D 124847 Typical Sleeve Locations
BIF File No. 840.42A Chlorinizer Model EVS
Ref. No. 840-M12

BIF File No. 840.44A Temperature - Pressure Relation
Ref. No. 840-L26A Chlorinizer Injection Equipment

Dwg. No. C-104362
BIF File No. 840.25
Ref. 840-G23E Chlorine Solution Injection Equipment

Dwg. No. BSD-3245
File No. 840.42 Chlorine Gas Manifold Dimensions
Ref. No. 840-H14A

Dwg. No. B121234
BIF File 840.45 EVS Chlorinizer Model EVS
Ref. No. 840-M3 Control Valve Assembly.

SM 2-51
File No. 840.49
Ref No. 840-F9

Canister Type Gas Mask
For Chlorinizer Service

BIF File 840.45
Ref. No. 840-R3

Parts & Recommended Spare Parts List
Model EVS Chlorinizer

8. Raw Sludge Pump

(a) Supplier:

Upton Bradeen & James Ltd.,
890 Yonge Street,
Toronto 5, Ontario.
Telephone: WA. 4-5751.

Manufacturer:

Ralph B. Carter Co.,
Hackensack, N.J., U.S.A.

(b) Name Plate Data:

Ralph B. Carter Co., Hackensack, N.J.
Model 800 Serial No. 79001
GPM 75 TDH 50

Motor

Canadian General Electric Co. Ltd.,
Toronto, Canada.
General Electric Induction Motor C.S.A.
Model 9F1195P3 No. 727059
HP 3 Service Factor 1.15
Speed 1160 Volts 550 Amp. 3.8
Phase 3 Cycle 60 Pr. 215
Cema Design B Type K 40°C Rise Cont.

Time Switch
Raw Sewage Pumps

Minneapolis Honeywell Regulator Co.
Da-Nite Timeswitch
Type S610A 1K1
Volts 115 Cycles 60

(c) Manufacturers' Publications:

Bulletin 5102 - Balto Standard Heavy Duty Carter Plunger
Sludge Pumps.
Dwg. No. D273A - Fig. 800 "Balto" Simplex
Sludge Pump (Ralph B. Carter Co.)

Manufacturers' Publications Cont'd

Sheet - Maintenance of the Carter Sludge Pump

Sheet - Carter Plunger Sludge Pump - Installation & Operation Instructions.

Sheet - List 106 - Carter Plunger Type Sludge Pump Illustrated Parts List.

Raw sludge Pump - Arrangement of Suction & Discharge Valves.

9. Activated Sludge Return Pumps

(a) Supplier & Manufacturer: The Canadian Fairbanks-Morse Co. Ltd.,
137-167 Harbour Street, Toronto,
Telephone: EM. 8-8321.

(b) Name Plate Data:

Activated Sludge Return Pumps #1 (west)

Fairbanks-Morse Made in U.S.A.

Size 4" 5422K

No. K91070 G.P.M. 336

Head 10 ft. RPM 860

Motor:

U.S. Electrical Motors Inc.

U.S. Varidrive Motor

Frame: 13-184-10 Cycles 60

Type: Veugh Motor RPM 1800

Gear Ratio: 2.29 H.P. 2 Rating 40 C

Volts 550 Design B

RPM Min. 475 Code K Hi Volt Amps. 3.1

RPM Max. 950 P.H. 3 Lo Volt Amps. _____

Serial 2712835

#2 East

Fairbanks-Morse Made in U.S.A.

Size 4" 5422K

No. K91071 GPM 336

Head 10 ft. RPM 860

Motor:

U.S. Electrical Motors Inc.

U.S. Varidrive Motor

Frame: 13-184-10 Cycles 60

Type: Veugh Motor RPM 1800

Gear Ratio: 2.29 H.P. 2 Rating 40C

Volts 550 Design B

RPM Min. 475 Code K Hi Volt Amps. 3.1

RPM Max. 950 P.H. 3 Lo Volt Amps. _____

Serial 2712836.

(c) Manufacturers' Publications:

Instructions No. 5420-1 - Horizontal Centrifugal Pumps
(Fairbanks-Morse)

Form F.1797 - U.S. Varidrive Booklet

Form D83366 - Operating Instructions - U.S. Motors.

44T4B84 - Setting Plan 4" Fig. 5422K Trash Pumps C.W. Rotation.

Sect. 346, Page 5 - U.S. Varidrive Motors -
General Instructions, Varibelts,
Installing and Removing Varibelts,
Varidrive Motor Lubrication Instructions,
Gear Case Lubrication Instructions (U.S.
Electrical Motors Inc.)

10. Sludge Division Box

- (a) Supplier: Charles E. Napier Co. Ltd.,
35 Marlborough Ave.,
Toronto 5, Ontario.

Manufacturer:
Chicago Pump Co.

- (b) Manufacturers' Publications:

Dwg. No. SA 3351 - Sludge Division Box, 10" to 12" Weir
Length (Chicago Pump Co.)

11. Sump Pumps

- (a) Manufacturer:

Atlas Engineering & Machinery Co. Limited,
14 Eastern Avenue,
Toronto, Canada.
Telephone: EM 8-3003.

- (b) Name Plate Data:

Sump Pump (North)	Atlas Engineering & Machinery Co. Limited, Toronto, Canada Serial X2725
(South)	Serial X2725 (Same)

Motor: Leland Electric Limited, Guelph, Ont.
Type KL 399
FR 66C H.P. 3/4
Form Bonjg Cycle 60
RPM 1725 Ph. 1
Volts 110/220 Amps. 10/5
No. 5257L3698
BX 6109

2nd Motor: Leland Electric Limited, Guelph, Ont.
Type KL 399
F 66C H.P. 3/4
Form Bonjg Cycle 60
RPM 1725 Ph. 1
Volts 110/220 Amps. 10/5
No. 5257L3698
BX 6108

12. Boiler & Heat Exchanger & Appurtenances

(a) Supplier: Dearborn Chemical Co. Ltd.,
2454 Dundas St. West,
Toronto, Ontario.
Telephone: LE. 4-2303.

Manufacturer:
Walker Process Equipment Inc.,
Aurora, Ill.

(b) Name Plate Data:

Boiler & Heat Exchanger: Walker Process Equipment Inc.
Serial No. 1175 6053

Boiler: CRN B 395 2.5
Nat Bo 2003
Beth Fort & Mach. Co. Serial No. A39
Lukens Sa-285-C T3 55000
Max WP 30PSI Water
HS 100 sq. ft. 1957
E. OR. S V CAP 500 lb/hr.

Relay: M/H
Type RA890C7KOA4
Volts 115 60 Safety Switch 12-18 sec.
Flames Response 0.8 sec.
105562 Fr.

Main Gas Valve: Brown Instrument Division
Minneapolis Honeywell Regulator Co.
Motorized Gas Valve
Type V 413A24K2
Volts 155 Cycle 60
Watts 10 Max. Press 8 0 2

Pilot Gas Valve B.I.D. - M-H L. Co.
M. G. V.
Type V 413A19K2
Volts 115 Watts 10 Cycle 60
Max. Press 802

Sludge Gas Feed Regulator:

2" Reynolds Gas Regulator Co.
NR 554 NR 571
NR 550 Ed.

Natural Gas Feed Regulator:

1½" Reynolds Gas Regulator Co.
NR 504

Low Water Cut Off McDonnell No. 460

Motorized Three Way Valve:

M - H - R Co. Motorized Valve _____
Type Q 601A4x4
Equipped with Modutrol Motor Type M 904E75DS6
Volts 24 50-60 cycle 17 Watts

Secondary Air Fan:

Motor - The Peerless Electric Co.,
C.S.A. Approval.
1/3 H.P. 3500 RPM 40° C.
1 ph. 115/230 Volts Cont. Duty
60 Cycles 5)2.5 amp.
Frame CEL W 56 C
Serial C1123DH
Thermal Overload Switch - Furnace Electric
Co. Style L-24B

Ignition Transformer:

Webster Electric Co., Racine, Wisc.
Serial A 204809 Type 3/2 24AC2 A5
Primary 115 Secondary 10,000 60 cycles
Primary 2.2 Secondary 0.023

Temperature Controller: M-H R Co. Type T915C307XA2

Hot Water Return Pump:

B & G P 2-121

Motor

Bell & Gossett
1/3 H.P. 1725 RPM 1 Ph. 60 Cyc.
115 Volts 4.6 amps. Continuous Rating 40° C.

Motor - Bell & Gossett Cont'd.

Ser. Mot. 107 - 6 - 10 - U
Protection MAH 2 BD

Safety Relief Valve:

McDownell No. 230 1 in.
Safety Relief Valve

Aquastat:

M - H R Co.
Aquastat Type L 4007 A 15 x OA3
Voltage 115V Ac. 230 Vac.
Full Load 7.4 3.7
Locked Rotor 44.4 22.2
2.0 @ 24 V Ac. Inductive
0.25 @ 1/4 to 12 v DC.

Thermostat - Honeywell - Horizontal Settings & Thermometer

Motor Starting Switches:

General Electric
Motor Starting Switch
CR 1061 - DOB
C.G.E.

Water Recirculation Pump:

1-1/4" Std. Mfd. by S.A. Armstrong Ltd.
Toronto 16, Canada.
Armstrong 6 Position Pump
Serial No. 5801

Motor: General Electric AC Motor C.S.A. Approval
Mod. 11 F 53 OBX Cy. 60
H.P. 1/10 Ph. 1 Fr. 43 TP. KH
V. 110 A. 2.4 RPM 1725
N R. Thermal Protection
C.G.E. Co. Ltd., Toronto.

(c) Manufacturers' Publications:

24S4755 Specifications - Heat X Unit Type EB
1175/6053 Sludge Gas and Natural Gas - 4 sheets

24S9480 Heat X Operating Instruction Index
Pages 0, 0.1, 1 to 15

Heat X Maintenance and General Operation -
3 Sheets.

Instructions for Adjusting Automatic Digester

Temperature Control with Proportioning
Three Way Valve and Sewers 90 Controller -
2 Sheets.

Spare Parts List Heat X - 2 sheets.

Dwg. No. S11125-0	- Heat X Type "EB" Sludge and Natural Gas Fired
File 24 S 9330	Walker Process Heat X Digester Sludge Heater End Casting Assembly
Dwg. No. S9810-0	Main Air Damper Heat X Units
Dwg. No. S11020-0	Eye Port - 2"
Dwg. No. S9737-0	Wiring Diagram - Heat Exchanger - Gas Fired Burner Controls
Dwg. No. S 9535-1	Wiring Diagram - Pump Controls - Heat X
Dwg. No. S10044-0	Recommended Make Up Water Piping Heat X Closed System.
Dwg. No. S10501-0	Typical Heat X Stack Installations
ED-36	The Peerless Electric Co. Service Instructions for Direct Drive Utility Blowers - 3 pages.
95-2035A	M - H Protectorelay R A 890C - 9 Pages
95-1773	M - H Aquastats L 4007A, B-C-D, L 6007A, -B, 3 Pages.
95-1089B	M - H Vaporstats L 108, L 408, L 608 - 4 pages.
Bulletin No L6950	B McDonnell, Built In Type Low Water Cut-Offs (McDonnell & Miller Inc.)
N R 500 E D	1½ Low Pressure Single Valve (Raynolds Gas Regulator Co.)
N R 550 E D	2" Single Valve Low Pressure Regulator
N R 10070 E-1	¼ - 3/8 Small Volume Regulator (R.G.R.)
95-1438	M - H Motorized Valves V413A and V415A
95-C-2423	M - H Motorized Valve Linkage Q601A
95-1435	M-H Three Way Valves V 538B
75-2518	M-H Three Way Mixing Valve Body V5013A
95-1380A	M-H Motorized Valve Linkage Q601A
95-C-1416	M-H Modutrol Motor M 904E

95-1168A M - H Temperature Controllers
T415 A, B, M, P, R, S and T615 A, D, E

95-1172 M - H Temperature Controllers T915 and L956

Bulletin EW 757 B & G Products Hydro - Flo
Booster Parts List (Bell & Gossett Co.)

Dwg. No. S10459 O Burner Assembly - Gas Only
#375 three #1500 incl. (Walker Process
Equipment Inc.)

Boiler Arrangement of Instrument Dials at Front
of Boiler:

13. Heated Sludge Lines Insulation

(a) Supplier: Dewar Insulations Ltd.,
Fleece Line,
Toronto, Canada.
Telephone: CL. 1-4523

(b) Manufacturers' Publications

Dwg. No. 58-8-1 - Details of Underground Piping for
Streetsville Sewage Treatment Plant

14. Digester Sludge Recirculation Pump

(a) Manufacturer &
Distributor: Bawden Industries Ltd.,
163 Sterling Avenue,
Toronto, Canada.
Telephone: LE. 3-2353.

(b) Name Plate Data:

Bawden Industries Ltd., Toronto, Canada
120 U.S.G.P.M. 35 ft.
58 1-1818

Motor: Robbins & Myers Co. of Can. Ltd.,
Brantford, C.S.A.
HP 5 Volts 550 Frame 215
Cyc. 60 Ph. 3 Amps. 3.45 RPM 1140
Type N Style Bowl M/S 8125
Duty Cont. 40° C Serial No. AH 77701

(c) Manufacturers' Publications

Bulletin No. 1500 Weinman Horizontal Non Clog
Centrifugal Pumps Type V-B

Instruction Manual with Hydraulic Engineering Data -
Weinman Pumps.

Dwg. No. 1-574

Weinman - Canada Type 3 UH-B
Centrifugal Pump

15. Digester Temperature Recorder:

(a) Supplier &
Manufacturer:

Mineapolis-Honeywell Control System,
Vanderhoof Avenue,
Leaside, Ontario.
Telephone: HU. 9-2151

(b) Name Plate Data:

Grown Electronic
M - H Brown Instruments Division
Brown Potentometer Pyrometer
Model No. 152 R 13 - PQ2 - 13 - 111 - 11
Range 1 25 - 115 FJ
Range 2 _____
Serial 997398
Chart No. 14201
Instrument Rating 115V 60 Cyc.
Control Circuit VAVA
Auxiliary Circuit VAVA

(c) Manufacturers' Publications:

Specification S 152-4a - M - H - Electronic Circular Chart
Electronic Controllers

Model No. 152 B 13 - PQ2 - 13 - 111 - 11 Instructions:
Installation, Operation, Maintenance.

16. Digester Mixer

(a) Supplier:

Dearborn Chemical Co. Ltd.,
2454 Dundas St. W.,
Toronto, Ontario.
Telephone: LE. 4-2303.

Manufacturer:

Walker Process Equipment Inc.,
Aurora, Illinois, U.S.A.

(b) Name Plate Data:

Walker Process Equipment Inc.,
Aurora, Ill.
Serial No. 11756529

Motor:

Westinghouse Life Time Motor,
HP 10
Frame 284-U

Model AB EP
Phase 3
60 Cycle 55° C Rise
550 Volts
10.8 Amps.
1160 RPM
Style 18 N 5126
Serial 18 N 5126

Switch Station: Square D Co., Toronto
Type G R 310 600 V AC or DC
W 263 - S18 - G6
Hazardous Locations, Class 1, Group D

(c) Manufacturers' Publications:

25S8580) Digester Mixer Approval Specifications
1175/6529) Digester Accessories Specifications.

Dwg. No. S-11052-0 - Anchorage Layout Digester -
Digester Mixer.

Dwg. No. S-11056-0 - Digester Mixer Assembly

Dwg. No. S-6118-0 - Weedless Propellor Assembly (Clamp On)

Dwg. No. S-709100 - Neenah Pressure Frame & Cover -
Cat. No. 6465-D

17. Gas Safety Equipment

(a) Supplier: Dearborn Chemical Co. Ltd.,
2454 Dundas St. W.,
Toronto, Ontario.
Telephone: LE. 4-2303.

Manufacturer: The Vapor Recovery Systems Co.,
2820 No. Alameda St.,
Compton, California.

"Varec" pressure relief and vacuum breaker valve
with flame arrester Fig. 5800C consisting of
"Varec" Fig. 2000 pressure relief and vacuum
breaker valve and a "Varec" Fig. No. 50A Flame
Arrester.

(b) Name Plate Data:

Fig. 2000 Serial C47067 Set at 5"-11" H₂O Pressure
2" H₂O Vacuum
Fig. 50A Serial 38397

(c) Manufacturers' Publications:

Instructions for Varec Fig. 42 Series Gauge & Thief Hole Cover.

Dwg. No. 2548 Gauge & Thief Hole Cover Fig. 42A -
(The Vapor Recovery Systems Co.)

Bulletin - Fig. No. 5800C Varec Pressure Relief and Vacuum Breaker Valve with Flame Arrester.

Dwg. No. C 1880 - Vent Valve Fig. 2000 Series

Dwg. No. C 1886 - Flame Arrester Fig. 50 Series.

18. Miscellaneous Equipment

(a) Hot Water Heater:

Ruud Manufacturing Co., Mimico, Canada.
Type P Serial 116 625 Size 20-17
Tank Cap. 16.7 Imp. Gals T.P. 300 lbs.
W.P. 127 lbs.
Recovery Cap. 14 Imp. Gals./Hr./100° Rise
Input 20.000 BTU/Hr. Equipped for use
with Nat. Gas.

(b) Natural Gas Meter:

Consumers' Gas Co.
3136 2" Reduced to 1½" at meter.
Capacity Air Per Hour 600 cu. ft. @ 1½"
Differential.
15 p.s.i. max. working pressure
.385 cu. ft. per rev.
Serial WG 3447

(c) Water Meter:

Neptune Meters Limited, Canada.
2" Trident Style 3 No. 7894103

(d) Fire Extinguisher:

Walter Kidde & Co. of Canada Ltd.,
Montreal, Canada.
Model 15 T 1 Carbon Dioxide Fire
Extinguisher
No. 118 4447 C
Tank No.'s 1 CC - 3AA 1800
22979 CA H Wk.

ONTARIO WATER RESOURCES COMMISSION

SEWAGE TREATMENT PLANT

VILLAGE OF STREETSVILLE, ONTARIO

SECTION "C"

LIST OF DRAWINGS

The following lists of drawings are shown here for future reference. Prints of all drawings listed have been bound and should be kept on file at the Sewage Treatment Plant. Additional prints may be procured from the offices of Proctor & Redfern, Civil and Consulting Engineers, Toronto, Ontario.

(a) Sewerage System - Village of Streetsville

1. Proctor, Redfern & Laughlin - Drawing No. Y-326 - General
2. Proctor, Redfern & Laughlin - Drawing No 7B-951 - West Part

(b) 1947 Plant Drawings

<u>Dwg. No.</u>	<u>Description</u>	
7B-265	Plan of Disposal Plant Site	July 1947
7B-262	Settling Tank	March 1947
6E-157	Sludge Drying Bed	Jan. 1947
6E-163	Effluent Filter Bed	Jan. 1947

(c) 1958 Plant Construction Drawings (l.e. Revised 1955 Dwgs.)
Village of Streetsville - Sewage Treatment Plant
Proctor, Redfern & Laughlin Drawings

<u>Dwg. No.</u>	<u>Title</u>	<u>Original Date of Dwg.</u>
7B-775	Site Plan	July 1955
7B-792	General Plan	Sept. 1955
7B-793	Primary Clarifier	Sept. 1955
7B-794	Secondary Clarifier	Oct. 1955
7B-795	Aeration Tanks	Oct. 1955
7B-796	Digester	Dec. 1955

(c) 1958 Plant Construction Drawings (i.e. revised 1955 Dwgs.)
cont'd.

<u>Dwg. No.</u>	<u>Title</u>	<u>Original Date of Dwg.</u>
7B-797	Digester Reinforcing	Dec. 1955
7B-798	Influent Works	Dec. 1955
7B-799	Chlorine Contact Chamber & Miscellaneous Details	Oct. 1955
7B-800	Pumphouse - Architectural	Nov. 1955
7B-801	Pumphouse Architectural Details	Nov. 1955
7B-802	Pumphouse Structural	Nov. 1955
7B-803	Pumphouse Piping	Dec. 1955
7B-804	Aeration Tanks & Clarifier Piping	Dec. 1955
7B-805	Exterior Piping Dimensional	Nov. 1955
7B-805A	Exterior Piping- Diagrammatic	Apr. 1958
7B-806	Sludge Heating Equipment	Dec. 16, 1955
7B-807	Heating of Pumphouse Building	Dec. 16, 1955
7B-808	Electrical	Feb. 1956
7B-809	Pumphouse - Plumbing and Drainage	Feb. 1956
7B-1321	Revisions to Air Piping	Feb. 1958
2B-881A	Effluent Filter Beds	Aug. 1955
5D-34	Sludge Heating Equipment (revised layout)	Jan. 1958.

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SEWAGE TREATMENT PLANT

VILLAGE OF STREETSVILLE, ONTARIO

SECTION "D" - LUBRICATION

Lubrication data is given in detail in each pamphlet of instruction, issued by the manufacturer of the individual piece of equipment, and filed in this manual. In many cases, over lubrication can result in as much damage as under lubrication. Since the manufacturer's guarantees are void, if their instructions are not followed, it is important that the Manufacturers Instructions be followed implicitly.


There will be some occasions when the manufacturers instructions cannot be followed to the letter. If any variance is made, a note should appear on the Sewage Treatment Plant Lubrication Schedule to indicate why any change has been made. Please be sure that the change is warranted.

Date Due

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STREETSVILLE SEWAGE TREATMENT
PLANT. 1959

STREETSVILLE SEWAGE TREATMENT
PLANT. 1959

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